

### Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims:

What is claimed is:

1. (Currently Amended) [[The]] A method of detecting, by a detection circuit of a receiver, a first signal in a received signal (y) using a pattern ( $\hat{s}$ ), the received signal (y) comprising at least one signal group ( $y^{(1)}, \dots, y^{(J)}$ ), each signal group comprising a number (K) of signal symbols, the pattern ( $\hat{s}$ ) comprising at least one pattern group ( $\hat{s}^{(1)}, \dots, \hat{s}^{(J)}$ ), each pattern group comprising at least a number (K) of pattern symbols, the method comprising:

multiplying, in an accumulator circuit, for each of said at least one signal group ( $y^{(1)}, \dots, y^{(J)}$ ), each signal symbol with a corresponding pattern symbol of said at least one pattern group ( $\hat{s}^{(1)}, \dots, \hat{s}^{(J)}$ ) and deriving a sum ( $\Sigma_1, \dots, \Sigma_J; A_j$ ) of the products of multiplication,

receiving one or more weight factors ( $x_1, \dots, x_J; \hat{C}_j$ ) by the accumulator circuit from a processing unit/DSP;

applying a weight factor ( $x_1, \dots, x_J; \hat{C}_j$ ) of one or more weight factors ( $x_1, \dots, x_J; \hat{C}_j$ ) by the accumulator circuit to each sum ( $\Sigma_1, \dots, \Sigma_J; A_j$ ) giving a weighted sum ( $x_1 \Sigma_1, \dots, x_J \Sigma_J; A_j / \hat{C}_j$ ), wherein said one or more weight factors ( $x_1, \dots, x_J; \hat{C}_j$ ) are selected to preserve an orthogonality relation of said pattern symbols of the at least one pattern group; and

determining if a signal is detected or not based on said one or more weighted sums ( $x_1 \Sigma_1, \dots, x_J \Sigma_J; A_j / \hat{C}_j$ ).

2. (Currently Amended) The method according to claim 1, wherein said step of determining if a signal is detected ~~or not~~ by a detection circuit of a receiver, comprises:

adding said one or more weighted sums  $(x_1 \Sigma_1, \dots, x_J \Sigma_J; A_j / \hat{C}_j)$  giving a first result  $(x_1 \Sigma_1, + \dots, + x_J \Sigma_J; A_j / \hat{C}_j; \Sigma_{j=1}^J C A_j / \hat{C}_j)$ ; and

comparing, by the accumulator circuit, said first result with a detection threshold  $(\tau, \tau_{FAR})$  received from the processing unit/DSP in order to determine whether said signal is detected or not.

3. (Currently Amended) The method according to claim 2, wherein said detection threshold  $(\tau, \tau_{FAR})$  is derived by the processing unit/DSP based on a signal to interference ratio of a common pilot channel (CPICH).

4. (Currently Amended) The method according to claim 2, wherein said detection threshold  $(\tau, \tau_{FAR})$  is derived by the processing unit/DSP based on a signal to interference ratio, where the interference is estimated on the basis of symbols of the received signal (y) that should be zero.

5. (Currently Amended) The method according to claim 4, wherein said detection threshold  $(\tau_{FAR})$  is derived by the processing unit/DSP based on a false detection rate factor  $(I_{FAR})$  and a standard deviation  $(\delta_e)$  of the interference of the received signal (y)

6. (Currently Amended) The method according to claim 1, wherein said one or more weight factors  $(x_1, \dots, x_J; \hat{C}_j)$  are derived by the processing unit/DSP on the basis of a signal to interference ratio (SIR) calculated for a common pilot channel (CPICH).

7. (Currently Amended) The method according to claim 6, wherein said signal to interference ratio (SIR) calculated for a common pilot channel (CPICH) is

dependent on an estimate of the interference ( $N_f^{(j)}$ ) for a given finger (f) of a RAKE receiver and a given group (j), where said method further comprising:

averaging the estimate of the interference ( $N_f^{(j)}$ ) over a predetermined number of groups before deriving said one or more weight factors ( $x_1, \dots, x_J; \hat{C}_j$ ) on the basis of the signal to interference ratio (SIR) calculated for the common pilot channel (CPICH).

8. (Previously Presented) The method according to claim 1, wherein said first signal is an acquisition indicator channel (AICH) signal or a collision detection/channel assignment indicator channel (CD/CA-ICH).

9. (Previously Presented) The method according to claim 1, wherein said received signal (y) is an estimated signal ( $\sum_{f=1}^F y_{k,f}^{(AICH)} w_{k,f}^*$ ) derived on a basis of one or more weighted channel estimates ( $w_{k,f}$ ) and of de-spread symbols ( $y_{k,f}^{(AICH)}$ ) from a RAKE, wherein the one or more weighted channel estimates ( $w_{k,f}$ ) are based on a common pilot channel (CPICH).

10. (Previously Presented) The method according to claim 1, wherein said received signal (y) comprises two or three signal groups and that the pattern ( $\hat{s}$ ) comprises at least two or three pattern groups.

11. (Currently Amended) [[The]] A device for detecting a first signal in a received signal (y) using a pattern ( $\hat{s}$ ), the received signal (y) comprising at least one signal group ( $y^{(1)}, \dots, y^{(J)}$ ), each signal group comprising a number (K) of signal symbols, the pattern ( $\hat{s}$ ) comprising at least one pattern group ( $\hat{s}^{(1)}, \dots, \hat{s}^{(J)}$ ), each pattern group comprising at least a number (K) of pattern symbols, the device comprises:

means adapted to for each of said at least one signal group ( $y^{(1)}, \dots, y^{(J)}$ ) to multiply each signal symbol with a corresponding pattern symbol of said at least one pattern group ( $\hat{s}^{(1)}, \dots, \hat{s}^{(J)}$ ) and to derive a sum ( $\Sigma_1, \dots, \Sigma_J; A_j$ ) of the products of multiplication,

means for applying a weight factor  $(x_1, \dots, x_J; \hat{C}_j)$  of one or more weight factors  $(x_1, \dots, x_J; \hat{C}_j)$  to each sum  $(\Sigma_1, \dots, \Sigma_J; A_j)$  giving a weighted sum  $(x_1 \Sigma_1, \dots, x_J \Sigma_J; A_j / \hat{C}_j)$ , where said one or more weight factors  $(x_1, \dots, x_J; \hat{C}_j)$  are selected to preserve an orthogonality relation of said pattern symbols of the at least one pattern group, and  
 means ~~(102; 103)~~ for determining if a signal is detected or not based on said one or more weighted sums  $(x_1 \Sigma_1, \dots, x_J \Sigma_J; A_j / \hat{C}_j)$ .

12. (Previously Presented) The device according to claim 11, wherein said means for determining if a signal is detected or not further comprises:

a summation circuit for adding said one or more weighted sums  $(x_1 \Sigma_1, \dots, x_J \Sigma_J; A_j / \hat{C}_j)$  giving a first result  $(x_1 \Sigma_1 + \dots + x_J \Sigma_J; \sum_{j=1}^J C A_j / \hat{C}_j)$ ; and

detection means for comparing said first result with a detection threshold  $(\tau, \tau_{FAR})$  in order to determine whether said signal is detected or not.

13. (Previously Presented) The device according to claim 12, wherein the device further comprises processing means for deriving said detection threshold  $(\tau, \tau_{FAR})$  based on a signal to interference ratio of a common pilot channel (CPICH).

14. (Previously Presented) The device according to claim 12, wherein said device further comprises processing means for deriving said detection threshold  $(\tau, \tau_{FAR})$  on the basis of a signal to interference ratio and for estimating the interference on the basis of symbols of the received signal  $(y)$  that should be zero.

15. (Previously Presented) The device according to claim 14, wherein the device further comprises processing means for deriving said detection threshold  $(\tau, \tau_{FAR})$  based on a false detection rate factor  $(I_{FAR})$  and a standard deviation  $(\delta_e)$  of the interference of the received signal  $(y)$ .

16. (Previously Presented) The device according to claim 11, wherein the device further comprises processing means for deriving one or more weight factors

$(x_1, \dots, x_J; \hat{C}_j)$  on the basis of a signal to interference ratio (SIR) calculated for a common pilot channel (CPICH).

17. (Previously Presented) The device according to claim 16, wherein said signal to interference ratio (SIR) calculated for a common pilot channel (CPICH) is dependent on an estimate of the interference ( $N_f^{(j)}$ ) for a given finger (f) and a given group (j), where said processing means is further adapted to:

average the estimate of the interference ( $N_f^{(j)}$ ) over a predetermined number of groups before deriving said one or more weight factors ( $x_1, \dots, x_J; \hat{C}_j$ ) on the basis of the signal to interference ratio (SIR) calculated for the common pilot channel (CPICH).

18. (Previously Presented) The device according to claim 11, wherein said first signal is an acquisition indicator channel (AICH) signal or a collision detection/channel assignment indicator channel (CD/CA-ICH).

19. (Currently Amended) [[A]] The device according to claim 11, wherein the device further comprises a combiner circuit for deriving said received signal (y) as an estimated signal ( $\sum_{f=1}^F y_{k,f}^{(AICH)} w_{k,f}^*$ ) derived on the basis of one or more weighted channel estimates ( $w_{k,f}$ ) and of de-spread symbols ( $y_{k,f}^{(AICH)}$ ) from a RAKE, wherein the one or more weighted channel estimates ( $w_{k,f}$ ) is based on a common pilot channel (CPICH).

20. (Currently Amended) [[A]] The device according to claim 11, wherein said received signal (y) comprises two or three signal groups and that the pattern ( $\hat{s}$ ) comprises at least two or three pattern groups.

21. (Previously Presented) The method of claim 1, wherein the method is ~~adapted to be used by~~ embodied in computer code stored on a computer readable

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medium ~~having stored thereon instructions for causing one or more processing units to~~  
~~execute~~ executed by a processor.